Three-Dimensional Liquid-Vapor Interface Reconstruction from High-speed Stereo Images during Pool Boiling

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Objective

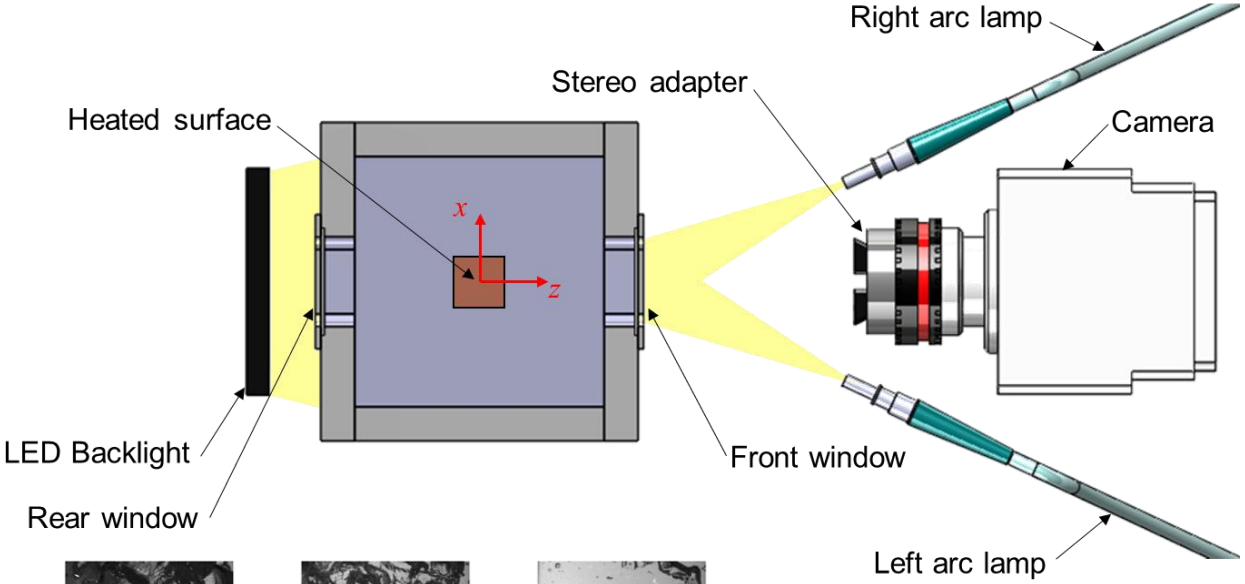
Develop a non-invasive, high-speed technique to characterize the dynamics of liquid-vapor interfaces near the heated during pool boiling.

Approach

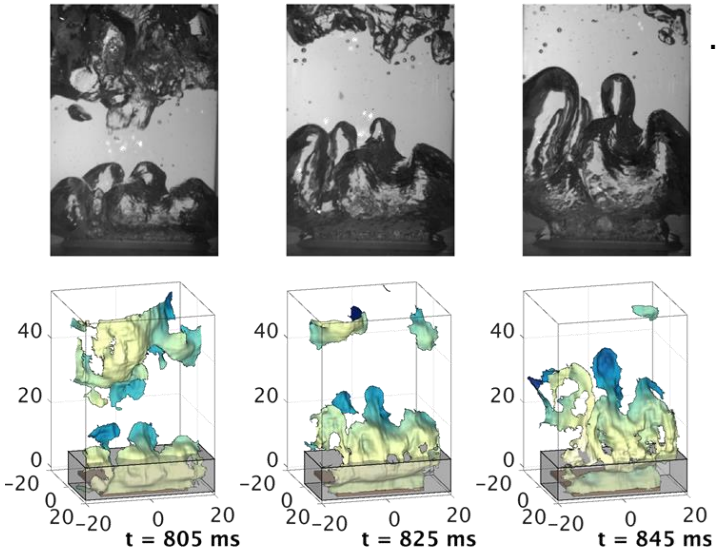
- Apply stereoscopic vision principles in three-dimensional reconstruction of liquid-vapor interfaces.
- Quantitatively characterize vapor flow dynamics during pool boiling.

Publication

C. Mira-Hernandez, J.A. Weibel, P.P. Vlachos and S. V. Garimella, *Int. J. Heat and Mass Transfer,* vol. 136, 265-275, 2019



. Schematic illustration of optical set up for reconstruction of liquid-vapor interfaces during pool boiling



Sequence of reconstructed interfaces during pool boiling from a smooth surface for a heat flux of 82 W/cm²

Impact

- Advance non-invasive techniques for interface tracking in two-phase flows.
- Improve understanding of vapor release modes during pool boiling.

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